THE FUTURE OF WORK : DATA ANALYSIS OF GLASSDOOR JOBS

A project report submitted to Jawaharlal Nehru Technological University, Kakinada

In the partial fulfillment for the award of the Degree of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING

<u>Submitted by</u>

Team Name: JOB EMPOWERS

Team Leader Name: Supriya Reddy Vanamala(20KE1A05A6)

Team Members Names: A.Sai Ramya(20KE1A0501)

M.Jyothi(20KE1A0557)

N.Hindu Priya(20KE1A0576)

B.Poojitha(20KE1A0585)

<u>Under the Noble Guidance of</u>

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

MALINENI LAKAHMAIAH WOMEN'S ENGINEERING COLLEGE (AUTONOMOUS)

(An ISO 9001-2008 Certified & NBA Accredited Institution)

(Affiliated to Jawaharlal Nehru Technological University, Kakinada)

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DEPARTMENT OF DATA SCIENCE

This is to certify that the project entitled **"The Future Of Work : Data Analysis Of Glassdoor Jobs"** *is a bonafide work* of

V.Supriya Reddy(20KE1A05A6), A.Sai Ramya(20KE1A0501), M.Jyothi(20KE1A0557), N.Hindu Priya(20KE1A0576), B.Poojitha(20KE1A0585)*in the partial fulfillment of the requirement for the award of the degree of Bachelor of Technology in* **COMPUTER SCIENCE AND ENGINEERING** *and for the academic year* **2023-2024.** *This work is done under my supervision and guidance.*

Signature of the Guide
Department

JAYA RAO SIR

Signature of the Head of the

Dr. RAMA SWAMY SIR(HOD

Signature of the External Examineni

<u>ACKNOWLEDGMENT</u>

"Task successfully" makes everyone happy. But the happiness will be gold without glitter if we didn't state the persons who have supported us to make it a success.

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TEAM MEMBERS

V.Supriya Reddy (20KE1A05A6)
A.Sai Ramya   (20KE1A0501)
M.Jyothi   (20KE1A0557)
N.Hindu Priya   (20KE1A0576)
B.Poojitha   (20KE1A0585)

DECLARATION

      We hereby declare that the project work entitled "**The Future Of Work : Data Analysis Of Glassdoor Jobs** " done under the guidance of **Mr. D. Ashok, Assistant professor**, is being submitted to the "Department of **COMPUTER SCIENCE AND ENGINEERING", MALINENI LAKSHMAIAH WOMEN'S ENGINEERING COLLEGE**, Guntur is of our own and has not been submitted to any other university or Educational for any degree or diploma.

TEAM MEMBERS

V.SUPRIYA REDDY	(20KE1A05A6)
A.SAI RAMYA	(20KE1A0501)
M.JYOTHI	(20KE1A0557)
N.HINDU PRIYA	(20KE1A0576)
B.POOJITHA	(20KE1A0585)

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ABSTRACT

Data analysis of Glassdoor jobs involves examining and interpreting the vast amount of job-related information available on the Glassdoor platform. This includes analyzing job listings, salaries, company reviews, interview experiences, and more. By performing data analysis on this information, individuals and organizations can gain insights into job market trends, company reputations, salary expectations, and other valuable insights to inform their job search or hiring strategies. Glassdoor jobs are an excellent resource for job seekers. They offer valuable insights into a company's culture, work-life balance, and career growth opportunities. In addition, Glassdoor provides salary estimates and interview questions to help job seekers prepare for the hiring process. Glassdoor jobs help job seekers learn about a company's culture, salaries, and interview process. Glassdoor jobs provide job seekers with valuable information about a company's employment opportunities. Glassdoor is a useful tool for job seekers. It provides information about companies' job offerings, salaries, and interview processes. Glassdoor jobs provide job seekers with company reviews, interview questions, and salary information. A data analyst researches and uses data to help companies make better business decisions by solving problems, optimizing profits, minimizing turnovers, and streamlining logistics. These professionals assess companies' complex information, including behavior, sales numbers, and market research. Data analysts seek to help businesses achieve smarter and simpler conclusions while using technical expertise to test the data for accuracy and quality. In this article, we discuss the steps required to become a data analyst.

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  - Job analysis is a systematic procedure to analyse the requirements for the job role and job profile. Glassdoor is a website and online platform that provides information about jobs, salaries, and companies. Job analysis is a systematic approach to defining the job role, description, requirements, responsibilities, evaluation, etc. It helps in finding out required level of education, skills, knowledge, training, etc for the job position. It also depicts the job worth i.e. measurable effectiveness of the job and contribution of job to the organization. Thus, it effectively contributes to setting up the compensation package for the job position.
  - Lack of analysis of Glassdoor jobs can result in limited understanding of job market trends, difficulty in finding relevant job opportunities, inability to attract and retain top talent, and lack of insight into company branding and reputation.
  - The purpose of this project is to conduct an analysis of Glassdoor job postings to gain insights into current and emerging job market trends, identify in-demand skills and experience, and understand how employers can improve their employer branding and reputation to attract and retain top talent.
  - I came up with this personal personal project to test my skills to the fullest and learn new things. In this project I scraped job postings related to the position of 'Data Scientist' from glassdoor.com, analyzed the gathered data and framed a machine learning problem out of it. In the below write up I'll mention the details on what I learned. I selected states of California, Washington, New York as major areas to find the roles.
  - Exploratory data analysis (EDA) is used by data scientists to analyze and investigate data sets and summarize their main characteristics, often employing data visualization methods. It helps determine how best to manipulate data sources to get the answers you need, making it easier for data scientists to discover patterns, spot anomalies, test a hypothesis, or check assumptions.

➢ EDA is primarily used to see what data can reveal beyond the formal modeling or hypothesis testing task and provides a provides a better understanding of data set variables and the relationships between them. It can also help determine if the statistical techniques you are considering for data analysis are appropriate. Originally developed by American mathematician John Tukey in the 1970s, EDA techniques continue to be a widely used method in the data discovery process today.

➢ The main purpose of EDA is to help look at data before making any assumptions. It can help identify obvious errors, as well as better understand patterns within the data, detect outliers or anomalous events, find interesting relations among the variables.

➢ Data scientists can use exploratory analysis to ensure the results they produce are valid and applicable to any desired business outcomes and goals. EDA also helps stakeholders by confirming they are asking the right questions. EDA can help answer questions about standard deviations, categorical variables, and confidence intervals. Once EDA is complete and insights are drawn, its features can then be used for more sophisticated data analysis or modeling, including machine learning.

➢ Glassdoor is a popular website that provides information about companies, salaries, reviews, and job listings. To perform a data analysis of Glassdoor jobs, you would typically collect and analyze data from their job listings and reviews. This could involve extracting information such as job titles, company names, salaries, locations, and job descriptions. Analyzing this data could help you identify trends in job markets, compare salary ranges, evaluate company ratings, and more. If you have specific questions or tasks in mind, please provide more details so I can assist you further.

➢ Certainly, I'd be happy to help you with data analysis related to Glassdoor jobs. Could you please provide more details about what specific aspects of the data you're interested in analyzing or any specific questions you have? This will help me provide you with more accurate and relevant information.

➢ Certainly! Glassdoor is a popular platform where users can find information about companies, job listings, salaries, and employee reviews. To perform a data analysis of Glassdoor jobs, you'd typically

start by collecting and cleaning the data, which could include job titles, company names, salaries, locations, and reviews. Then, you can analyze trends, such as the most common job titles, salary distributions, job satisfaction levels based on reviews, and geographical distribution of jobs. This analysis can provide insights into the job market, industry trends, and help job seekers make informed decisions. If you have specific questions or need assistance with a particular aspect of the analysis, feel free to ask!

➢ We live in the era of data. More and more businesses realize the potential to create value out of data. The advancements in technology offer highly efficient tools to both collect and analyze data which further motivated businesses to invest in data science and analysis. Thus, we see job listings like data analyst, data scientist, machine learning engineers on various platforms more than ever.

➢ I recently came across a dataset of data analyst job listings on kaggle which contains details of 2253 jobs from glassdoor website. I wanted to explore this dataset to gain insight on the details of jobs. It will also be a good practice of using data analysis tools.

➢ Data cleaning and analysis with pandas.

➢ Basic natural language processing (NLP) techniques with NLTK.

➢ Data visualization with matplotlib and seaborn.

➢ Glassdoor jobs are an excellent resource for job seekers. They offer valuable insights into a company's culture, work-life balance, and career growth opportunities. In addition, Glassdoor provides salary estimates and interview questions to help job seekers prepare for the hiring process.

➢ Glassdoor jobs help job seekers learn about a company's culture, salaries, and interview process.

➢ Glassdoor jobs provide job seekers with valuable information about a company's employment opportunities.

➢ Glassdoor is a useful tool for job seekers. It provides information about companies' job offerings, salaries, and interview process.

➤ Glassdoor jobs provide job seekers with company reviews, interview questions, and salary information.

2.RELATED WORK:

- Glassdoor launched new search options Oct. 10 that allow job seekers to filter company results by ratings like diversity and inclusion scores or by overall ratings from demographic groups such as race and ethnicity, the company said in a news release.

- Using the new search function, users are able to filter by work-life balance; culture and values; D&I, race and ethnicity; and gender identity and sexual orientation, among other things.

- The new search functions "aim to make it easier for people to uncover companies that align with their unique values and experiences and can help them make even more informed decisions about where to work," Glassdoor CEO Christian Sutherland-Wong said in a news release.

- A Glassdoor survey conducted last month found that 43% of U.S. employees experienced or saw discrimination in the workplace, while 30% said their employer's values don't align with their own. The survey, which was completed by market research firm The Harris Poll, revealed that 36% of employees aged 18-44 consider D&I important when determining where to work.

- A March 2021 survey by Boston Consulting Group, The Network and Appcast similarly found that 51% of U.S. respondents exclude companies that don't share their views on D&I from their job searches. That number climbed to 56% among those aged 30 and younger.

- The new filters come two years after Glassdoor first gave users the option to rate companies on D&I and other workplace characteristics. At the

time, the company said the move was part of a broader effort to improve equity.

- In addition to the importance of D&I in a job search, the recent Glassdoor survey also showed that 71% of respondents care about work-life balance when choosing where to work. Using the new filters, Salesforce, Johnson & Johnson and Hubspot rank highly on that front, the company said.

- The reality is that work-life balance is not inherent in any job, occupation, or work style. Instead, it means something different for each of us and is as much the product of our own efforts as the parameters of our jobs. Nonetheless, there are some flexible jobs that could make achieving work-life balance easier than others.

1.Data analyst :

Average salary: $63,260 base pay, plus $29,516 in additional compensation .

Data analysts collect, clean, study, and model data to help organizations and businesses make informed decisions. Their work spans many industries, including business, finance, medicine, and government.

The job of a data analyst is related, though distinct, from that of a data scientist, which tends to ask bigger questions of data and also design original experiments surrounding data. While you will likely need to get a master's degree to become a data scientist, you could start a career as a data analyst by either formally studying it in college or building skills on your own or through a certification or credential.

As a data-heavy role that involves computers, the job of a data analyst might appeal to those who enjoy working with numbers and are looking for a position that can likely be done remotely.

2. UX or UI designer :
Average salary: $81,188 base pay, plus $19,923 in additional compensation (UX designer) ; $79,664 base pay, plus $24,488 in additional compensation (UI designer)

User experience (UX) designers oversee every aspect of a product's design from a user experience standpoint. User interface (UI) designers, meanwhile, design all the screens that users go through on an app, website, video game, or virtual menu.

Becoming a UX or UI designer often means building a portfolio of work to demonstrate your skills. Gain or refine these skills in numerous ways: through flexible online courses, in a certificate program, or with a college degree in a relevant field.

The job of a UX or UI designer will likely appeal to those who enjoy creative fields with a practical research-oriented angle. Furthermore, many aspects of UX and UI design are also able to be conducted remotely, meaning it is a job that lends itself to working from home.

3.Real estate agent:

Average salary: $99,297 base pay, plus $38,111 in additional compensation [5]

Real estate agents work with clients to buy, sell, and rent properties. In addition to conducting a significant portion of their working days outside of the office at properties, real estate agents also typically get the benefit of setting their own work schedules.

In order to become a real estate agent, you will likely need at least a high school diploma and gain state licensure. Prior to getting your license, you will likely need to take real estate courses at the community or four-year college level.

Becoming a real estate agent might appeal to individuals who enjoy client-facing sales roles that allow them to have control over their own schedule.

4. Statistician :

Average salary: $73,637 base pay, plus $23,728 in additional compensation [6]

Statisticians analyze data to help businesses and other organizations understand trends and make decisions. Like the closely related roles of data scientist and

data analyst, statisticians can find work in a wide variety of fields, including health care, public safety, and even sports. Most statisticians have a master's degree in either statistics or mathematics.

The role of statistician will likely appeal to those who enjoy working with numbers and are looking for a job that allows for the possibility of working from home.

5. Web developer:

Average salary: $72,663 base pay, plus $32,308 in additional compensation [7]

Web developers build and maintain websites, such as this one. Using a range of design and programming skills, web developers ensure that sites function properly for clients and visitors.

In order to become a web developer, you don't necessarily need a degree, but some employers might prefer candidates with a bachelor's degree. That said, you can become a web developer with either a high school diploma or an associate degree.

Web developers can either be freelance or work in-house for a company, meaning it could potentially offer flexible employment models. If you enjoy working with computers, then becoming a web developer might offer you the opportunity to work remotely with a flexible schedule.

6. Financial advisor:

Average salary: $120,956 base pay, plus $48,853 in additional compensation [8]

Financial advisors help clients manage and plan their personal finances. Some of the responsibilities of the role include helping clients set short and long-term goals, invest, and maneuver tax laws.

In order to become a financial advisor, you likely need a bachelor's degree and will need to undergo on-the-job training with a supervisor to gain key skills. Optional professional certifications, such as those offered by the Certified Financial Planner Board of Standards, may help you gain valuable credentials, and special licenses are required for those who wish to buy or sell bonds, stocks, or insurance policies.

In addition to working in corporate settings, many financial advisors also work as freelancers with their own clients. If you enjoy working with numbers and want a job that offers the possibility for a flexible work schedule, then you might consider a career as a financial planner.

7. Corporate recruiter:

Average salary: $63,199 base pay, plus $27,702 in additional compensation [9]

Corporate recruiters handle the hiring of talent, including sourcing and screening candidates, for companies and other organizations. Through their work, recruiters must be good at working with other people, identifying client needs, and locating strong candidates for corporate positions.

In order to become a recruiter, you will typically need a bachelor's degree in a related field, such as in human resources or business. In some cases, employers might prefer candidates with related work experience as a human resources assistant or customer service representative.

Occasionally, corporate recruiters must travel for their work to attend job fairs. As a result, becoming a corporate recruiter might appeal to individuals who enjoy traveling, working with people, and having the opportunity to conduct business outside of the office.

8. Project manager:

Average salary: $73,859 base pay, plus $18,327 in additional compensation [10]

Project managers organize, plan, and execute projects while working within budgetary and scheduling constraints. Their project-based skill set allows them to work in a wide variety of fields, including construction, tech, business, and government.

Requirements for project managers vary from project to project and employer to employer. Some employers might prefer that you have an advanced degree, such as a Master of Business Administration (MBA) or a Master of Science in Management (MSM), though this is not always required.

If you are someone who is good at planning, organizing, and working with others, then a role as a project manager could offer the opportunity for flexible remote work.

9. Social media manager:

Average salary: $50,266 base pay, plus $23,500 in additional compensation [11]

Social media managers handle all aspects of the social media presence of a company, organization, or individual. As a result, they are tasked with ensuring their clients stay on-brand and on-message when posting material and responding to commenters.

While there is no specific credential required to become a social media manager, employers might prefer candidates with a bachelor's degree in a related field, such as marketing, business, or communications. You could also start building the needed skills through a Professional Certificate as either an alternative or a supplement to a college degree.

If you are someone who enjoys marketing and using social media, then you might consider a career as a social media manager, a job that can often be done remotely—occasionally even from your phone.

3.THE PROPOSED METHOD BASED ON LINEAR REGRESSION:

Does our salary really grow with our years of working experience? While this can be answered based on our general understandings of the job market, we will use a simple data-driven approach to verify the fact. We will use **linear regression** to model the relationship between the amount of salary with the years of working experience.

Linear regression is a model that assumes a linear relationship between an **explanatory variable (X) and a response variable (y)**. We can predict the value of y based on the value of X. In our context here, the estimated salary will be our response variable (y) since it is our target predicted value and the years of working experience will be our explanatory variable (X).

Once we have defined the explanatory variable and response variable in our case, we will use **Python** to build a linear regression model to address our question**.**
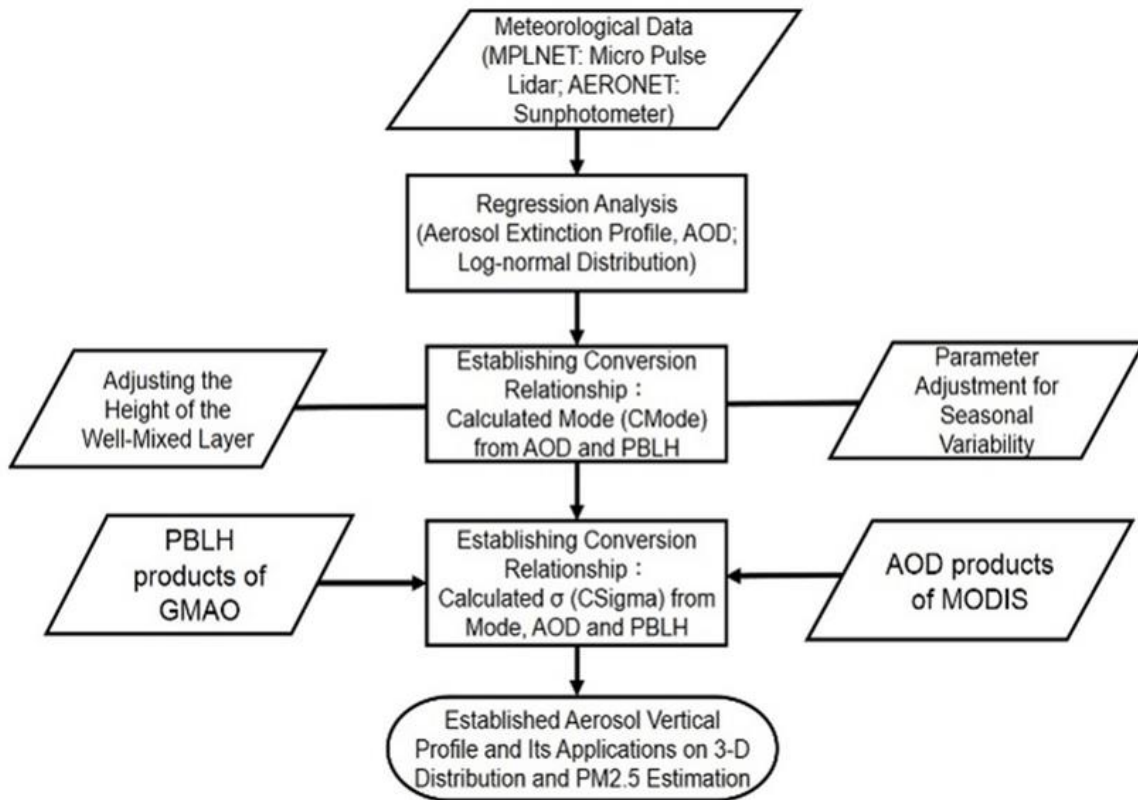
Some errors may be due to the slow internet speed so adding extra time.sleep functions between page loading steps will help prevent errors.

XPath is helpful to locate the element you want to click on. After you are familiar with the XPath, you may find it actually very straightforward. First, right-click on the element and select *inspect*, then right-click on the selected part of HTML code and select *copy XPath*.

3.1 Regression's Role in predicting the Costs:

Regression analysis is a statistical technique for determining the relationship between a single dependent (criterion) variable and one or more independent (predictor) variables. The analysis yields a predicted value for the criterion resulting from a linear combination of the predictors. According to Pedhazur,[15] regression analysis has 2 uses in scientific literature: prediction, including classification, and explanation. The following provides a brief review of the use of regression analysis for prediction. Specific emphasis is given to the selection of the predictor variables (assessing model efficiency and accuracy) and cross-validation (assessing model stability). The discussion is not intended to be exhaustive. For a more thorough explanation of regression analysis, the reader is encouraged to consult one of many books written about this statistical technique (eg, Fox;[5] Kleinbaum, Kupper, & Muller;[12] Pedhazur;[15] and

Weisberg[16]). Examples of the use of regression analysis for prediction are drawn from a study by Bradshaw et al.[3] In this study, the researchers' stated purpose was to develop an equation for prediction of cardiorespiratory fitness (CRF) based on non-exercise (N-EX) data.

3.2. Steps for Applying Regression to Datasets:

Regression Analysis is an analytical process whose end goal is to understand the inter-relationships in the data and find as much useful information as possible. According to the book, there are a number of steps which are loosely detailed below.
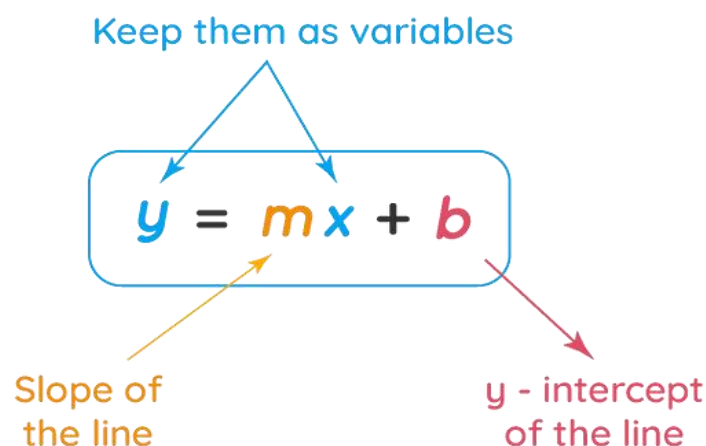
Steps in Regression Analysis

Regression Analysis is an analytical process whose end goal is to understand the inter-relationships in the data and find as much useful information as possible. According to the book, there are a number of steps which are loosely detailed below.

1. Problem definition

The very first step is to,ofcourse, define the problem we are trying to solve. Perhaps a business question that needs to be answered or simply a prediction we want to make based on some set of data. In this stage we must know the target

variable and the attributes we presume affects the target variable. This would be later analysed to judge its credibility.

For the sake of our discussion lets take the Titanic Dataset as an example. In this dataset we have data of about 900 passengers.The question or the problem we must solve is predicting which passenger likely survived the tragedy given their data.

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	NaN	S
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	C85	C
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9250	NaN	S
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	C123	S
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	NaN	S

2. Analyse Data
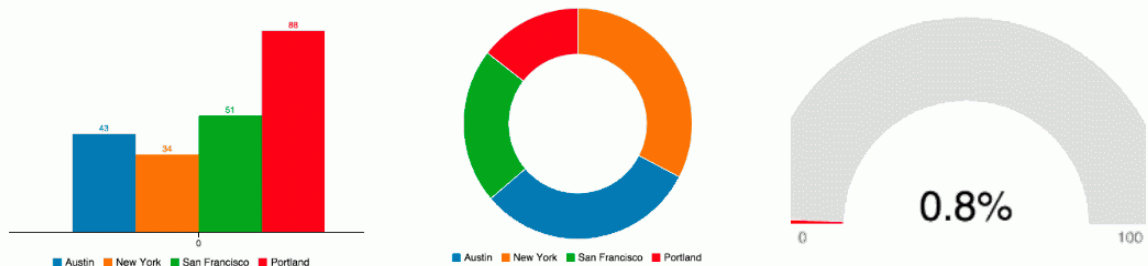
Graphs and charts

The **key** is to have visual representations of our data so we can better understand the 'inter-relationships' of the variables and likely so, the book I was referring to

earlier, highly recommends using visual tools to make the EDA(Exploratory Data Analysis) process easier.

For the afore-mentioned dataset, we could try answering a number of things that might give us a better understanding of the problem at hand.

3. Model Selection

Based on the data , we are to pick a suitable model or regression equation. You may be familiar with many such models like Linear Regression, Support Vector Machine, Random Forest etc. The task in this step is to pick one that we assume will express the relationships of our data in the best way possible. This assumption can be later accepted or refuted based on analysis after fitting the model.

4. Model Fitting

For simplicity's sake, lets consider Linear regression. *Y= mx+c*. We have the data, we have a model. At this stage we are going to *train* the model on the given dataset but what of the parameters of this equation?

We must estimate these parameters when fitting the model however they can be optimised with many algorithms. Perhaps this is when terms like 'Gradient Descent' or 'Adam optimiser' rings a bell. The purpose of an optimiser is simply to update the values in every iteration of training so we can minimise loss or error. This is the part where our model learns to correct itself and provide a best fitting solution or model that would likely have high accuracy.

For a simple model like Linear regression, we can use **Least Squares method** to estimate the parameters '**m (slope)'** and **'c (y-intercept)'** to get the best fit line

that crosses through most of the data points.The least squares method basically minimizes the sum of the square of the errors as small as possible given that no outliers are present in the data.

5. Model evaluation

Final step is model evaluation — measuring and criticising exactly how good is the model fitting the data points. We run the model on the test data and check to see how accurately it was able to predicit the output values. Now, there are a number of measures to check this as discussed below:

i) We can find **RMSE**(root mean squared error) of the actual Y values and predicted Y values. There are other variations of it that can be explored.

$$RMSE = \sqrt{\frac{1}{n} \sum_{i=1}^{n} (\hat{y}_i - y_i)^2}$$

Formula for RMSE

ii) We can calculate **R-squared** value which measures the goodness of fit or varaince within a range of 0 to 1 where ideal value is 1.

$$R^2 = \frac{SSR}{SST}$$

$$SSR = \sum_i (\hat{y}_i - \bar{y})^2$$

$$SST = \sum_i (y_i - \bar{y})^2$$

Where,

- SSR is Sum of Squared Regression also known as variation explained by the model
- SST is Total variation in the data also known as sum of squared total
- y_i is the y value for observation i
- y_bar is the mean of y value
- y_bar_hat is predicted value of y for observation i

Formula to find R-squared value

iii) We can perform cross validation to asses which model among a few chosen performed the best for our given problem.

iv) Finding statistical significance of parameters. This involves stating a hypothesis, a null hypothesis and an alpha level(probability of error level). An example is **Chi-squared Test** which tests if there is any relation between two variables.

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

χ^2 = chi squared

O_i = observed value

E_i = expected value

Formula for Chi-Square Statistical Test

There are many other methods , some more complex than others but these are usually a good place to start. Based on this analysis, the model is updated and perfected after which it can be used for its intended purpose.

Index	R&D Spend	Administration	Marketing Spend	State	Profit
0	165349	136898	471784	New York	192262
1	162598	151378	443899	California	191792
2	153442	101146	407935	Florida	191050
3	144372	118672	383200	New York	182902
4	142107	91391.8	366168	Florida	166188
5	131877	99814.7	362861	New York	156991
6	134615	147199	127717	California	156123
7	130298	145530	323877	Florida	155753
8	120543	148719	311613	New York	152212
9	123335	108679	304982	California	149760
10	101913	110594	229161	Florida	146122
11	100672	91790.6	249745	California	144259
12	93863.8	127320	249839	Florida	141586
13	91992.4	135495	252665	California	134307

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3.3. Training Phase:

To train a data set using data analytics on Glassdoor job analysis, you can use various machine learning algorithms.You can use different types of machine learning algorithms, such as decision trees or logistic regression, to train the data set on Glassdoor job analysis.To train a data set on Glassdoor job analysis, you can also use deep learning algorithms, such as convolutional neural networks (CNNs) or recurrent neural networks (RNNs).

To train a data set on Glassdoor job analysis, you need to follow these steps:

1. Collect the data from Glassdoor.

2. Preprocess the data to remove any irrelevant or duplicate data.

3. Split the data into training and testing sets.

4. Choose a machine learning algorithm, such as decision trees or CNNs.

5. Train the algorithm on the training set.

6. Test the algorithm on the testing set to evaluate its accuracy.

7. Fine-tune the algorithm to improve its performance.

8. Use the trained algorithm to make predictions on new data.

Employee Referrals Account for 10 Percent of Reported Job Interviews

2% Staffing Agency
4% Other
8% In-Person
9% Recruiter
10% Employee Referral
10% College or University
15% No Response
42% Applied Online

GLASSDOOR®

Note: Based on a sample of more than 440,000 job interview reviews from Glassdoor.
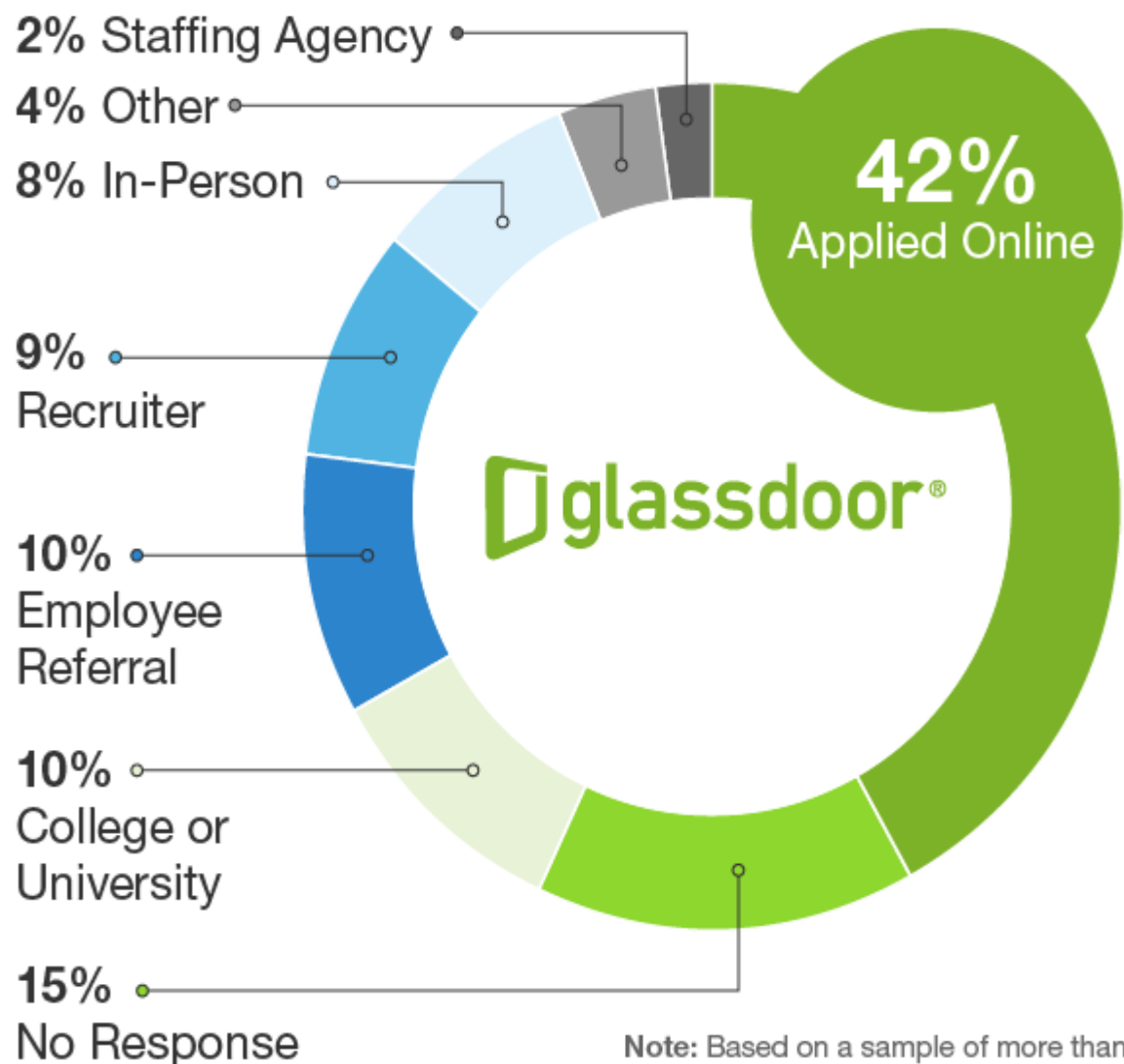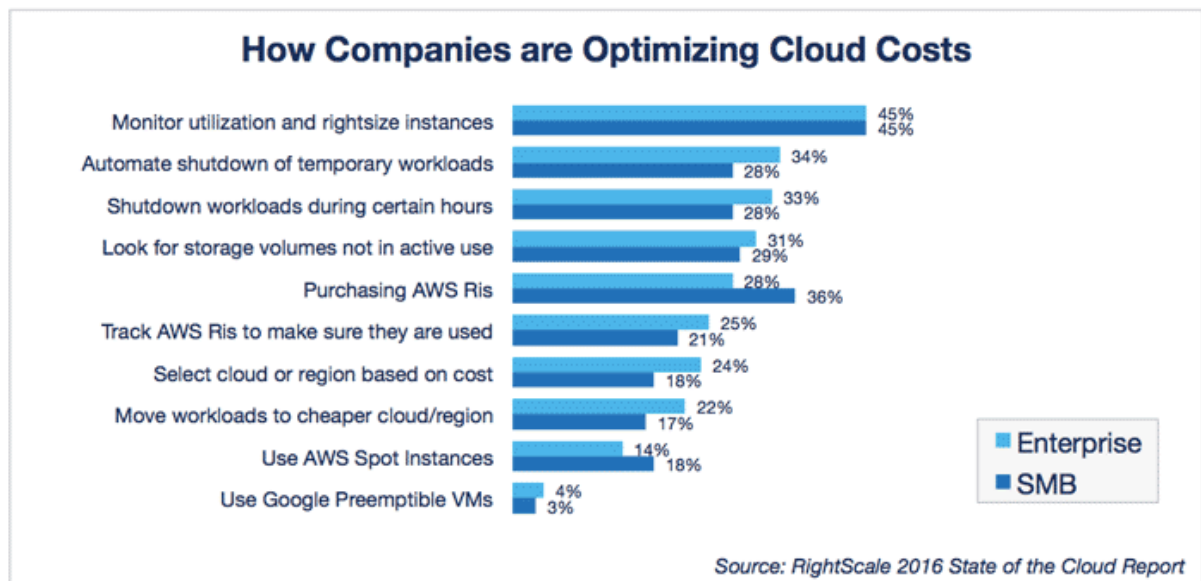
3.4. Time Optimizing in Computing:

Small and middle size high-performance computing clusters are very popular for various applications. How to utilize the accumulated log data generated in the past to optimize job scheduling using machine learning techniques is an interesting problem. Most of the current work use the common machine learning algorithms, such as the multivariate linear regression and polynomial model, to predict job runtime and optimize job scheduling. They either ignore the interference among job features or require a high time overhead for improving the prediction accuracy. In this paper, we propose to implement and improve broad learning algorithm for predicting the execution times of new coming jobs more accurately and efficiently. The experimental results showed that the proposed method can obtain high prediction accuracy with a negligible time overhead. And the predicted job execution time can help improve the efficiency of job scheduling and HPC systems.

The algorithm used to train the data set depends on the type of data and the problem you're trying to solve. Common algorithms include decision trees, linear regression, and clustering.You mentioned that you want to analyze jobs on Glassdoor, so you would collect data from Glassdoor. This data could include job titles, salaries, company ratings, and job descriptions, among other things.

Optimization computing is the process of making computer systems more efficient and effective. Optimization computing can be used to improve the performance of a wide range of computer systems, including servers, databases, and applications. It involves analyzing and optimizing various components of the system, such as algorithms, data structures, and hardware.

Optimization computing is the process of improving the efficiency of computer systems. There are various types of optimization computing, such as algorithm optimization, data structure optimization, and hardware optimization. These methods can be used to improve the performance of servers, databases, and applications. The use of optimization computing can help organizations save time and money by reducing the need for hardware upgrades and improving the user experience.

How Companies are Optimizing Cloud Costs

	Enterprise	SMB
Monitor utilization and rightsize instances	45%	45%
Automate shutdown of temporary workloads	34%	28%
Shutdown workloads during certain hours	33%	28%
Look for storage volumes not in active use	31%	29%
Purchasing AWS Ris	28%	36%
Track AWS Ris to make sure they are used	25%	21%
Select cloud or region based on cost	24%	18%
Move workloads to cheaper cloud/region	22%	17%
Use AWS Spot Instances	14%	18%
Use Google Preemptible VMs	4%	3%

Source: RightScale 2016 State of the Cloud Report

Time analysis computing is a process of analyzing data over time to identify trends, patterns, and insights. It is often used in data analytics projects to help organizations make better decisions based on historical data.
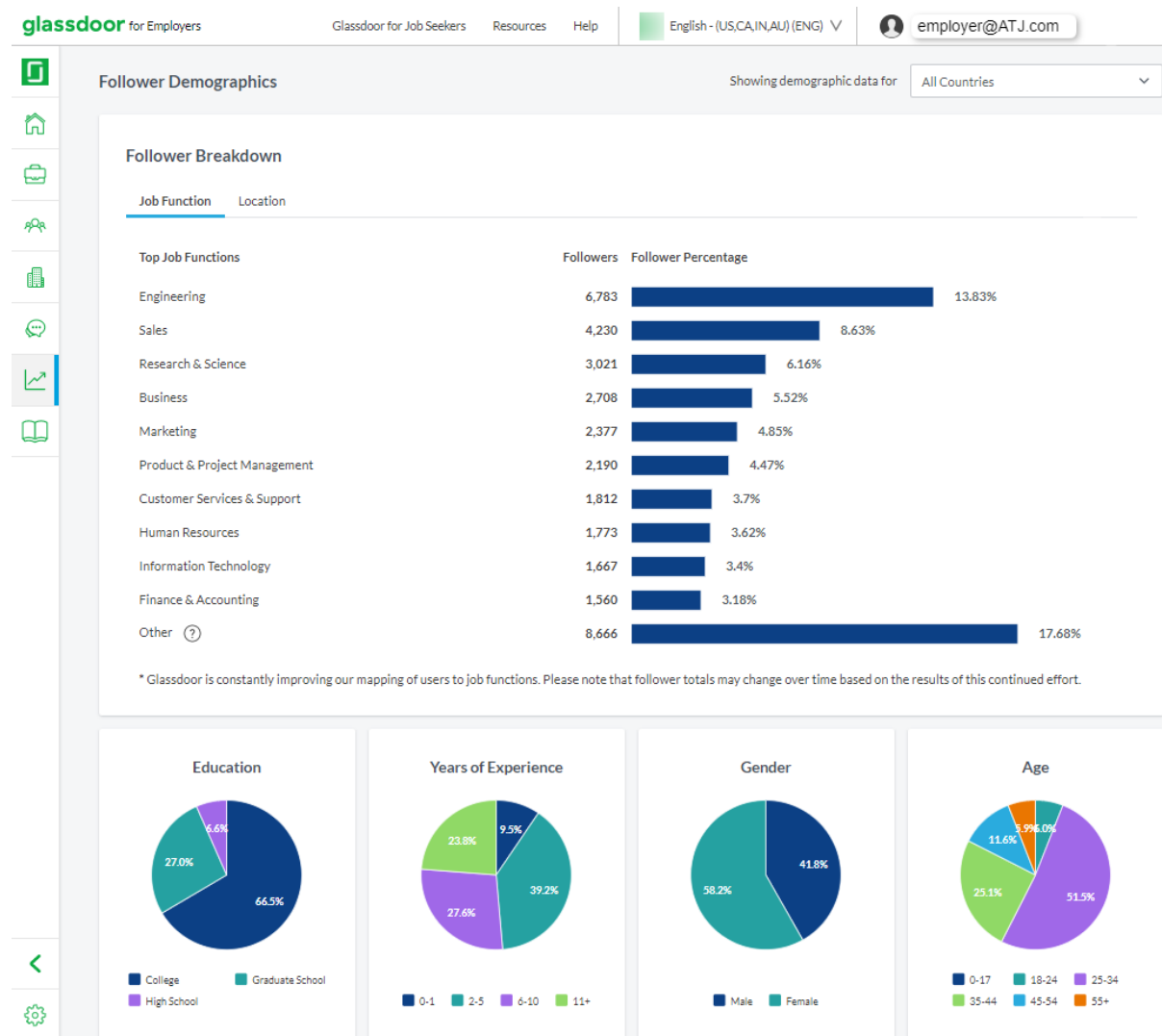
4. RESULT AND ANALYSIS

It seems like you're interested in conducting data analysis on Glassdoor job listings and their results. To provide a detailed analysis, we would need more specific information about the data you have or plan to collect. However, I can give you a general overview of the steps you might take and the kind of analysis you could perform on Glassdoor job listings data.

1. Data Collection:

Gather data from Glassdoor job listings. You might consider collecting information such as job title, company name, location, salary, job description, required skills, years of experience, and any other relevant factors.
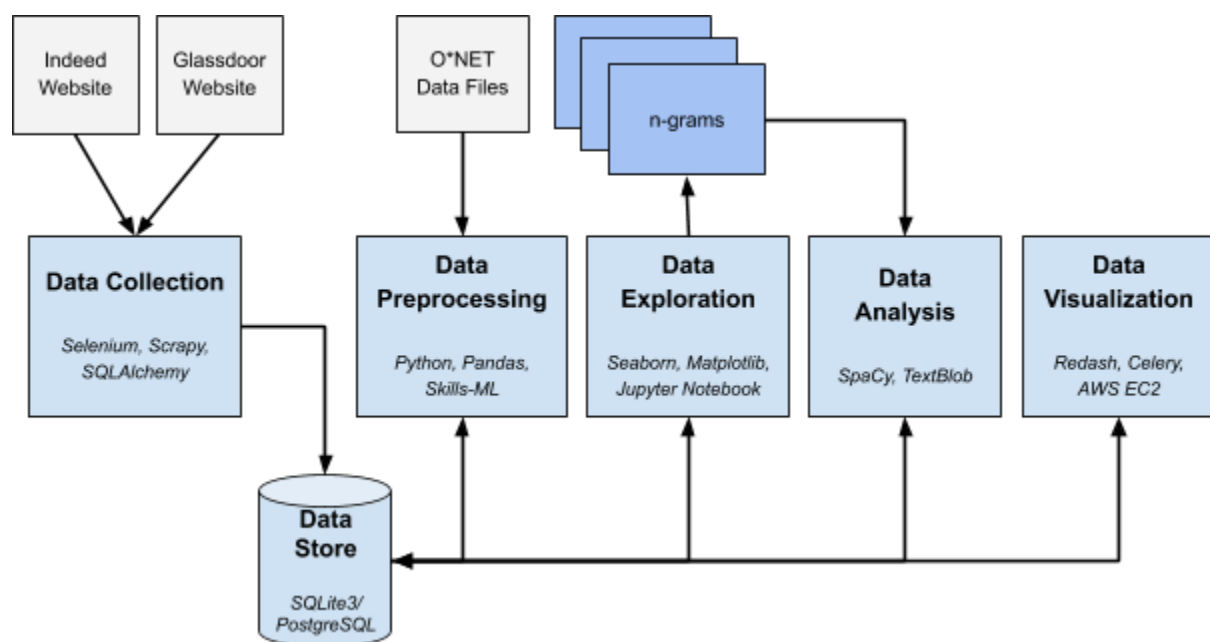
2. Data Cleaning and Preparation:

Clean the collected data by handling missing values, removing duplicates, and ensuring consistency. Pre-process the text data by removing stop words, punctuation, and converting text to lowercase.

3. Exploratory Data Analysis (EDA):

Conduct exploratory analysis to understand the distribution of data. This could involve creating histograms, bar charts, and scatter plots to visualize the distribution of job titles, salaries, locations, and other relevant attributes.

Data Analytics Lifecycle

| Data Collection |
| EDA |
| Data Preparation |
| Feature Engineering |
| Model Building |
| Model Evaluation |
| Model Deployment |
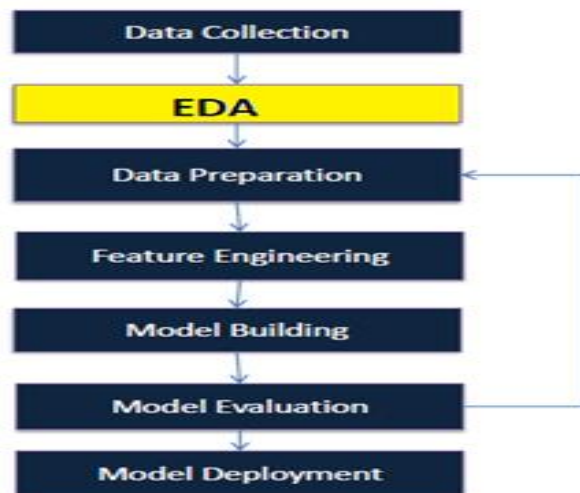
4. Salary Analysis:

Analyze the salary data to identify trends and insights. You could calculate average, median, and distribution of salaries based on job titles, locations, and company sizes. Compare salaries for different industries or job roles.

5. Skill Analysis:

Identify the most commonly required skills for various job positions. Create word clouds or bar charts to visualize the frequency of skills mentioned in job descriptions. You could also perform text analysis to extract key skills.

Data Analyst salaries
United States
View jobs

| Finance ▼ | All years of experience ▼ | | 1,207 responses |

Base salary	Total compensation ⓘ
$65,000 /yr	**$68,000** /yr
Range: $42K – $95K	Range: $42K – $1Lakh

Median: $65,000

$41,900 $95,000
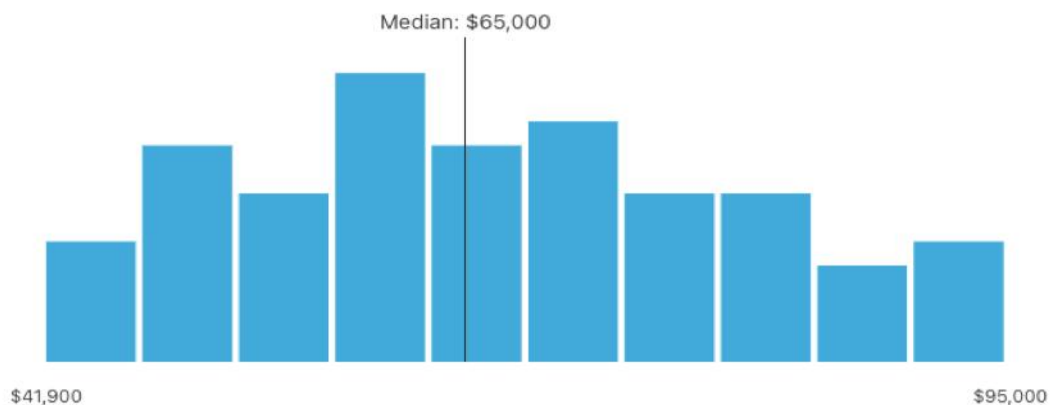
6. Location Analysis:

Analyze job listings by location to understand where the most opportunities are available. Create heatmaps or geographical visualizations to represent the concentration of job listings in different regions.

Three Data Scientist Personas and What They Earn

	Skills Likely to Have	Percentage of Data Science Jobs	Average Estimated Salary
Core Data Scientist	Python, R, SQL	71%	$116,203
Researcher	SAS, Matlab, Java, Hadoop, Python, R	15%	$112,346
Big Data Specialist	Spark, Hive, Hadoop, Java, Python	14%	$121,246

Source: Glassdoor Economic Research.

glassdoor

7.Time Trends:

Analyze how the number of job listings or salary offers changes over time. This could involve creating time series plots to observe seasonal hiring patterns or changes in demand for specific roles.
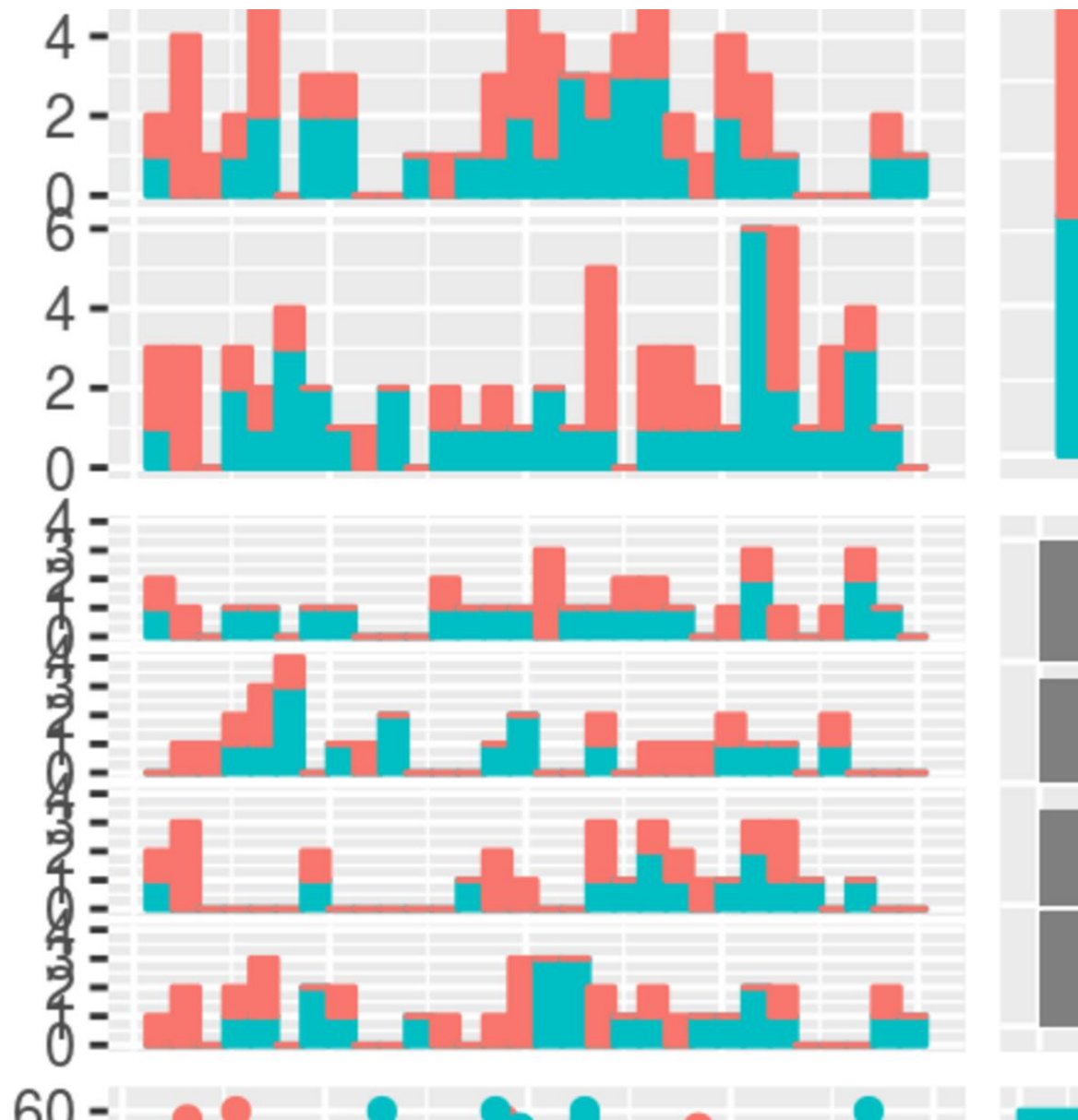
9. Sentiment Analysis:

Conduct sentiment analysis on company reviews or job descriptions to gauge overall sentiment. This could help you understand the general sentiment around different companies or job roles.

10. Predictive Modeling (Optional):

If you have historical data, you could build predictive models to forecast job trends, salaries, or other relevant factors.

Remember that the analysis you perform will largely depend on the data you have and the specific insights you're seeking. Make sure to appropriately visualize your results to effectively communicate your findings.

What % of DA / DS / ML jobs mention this skill? - N = 1082
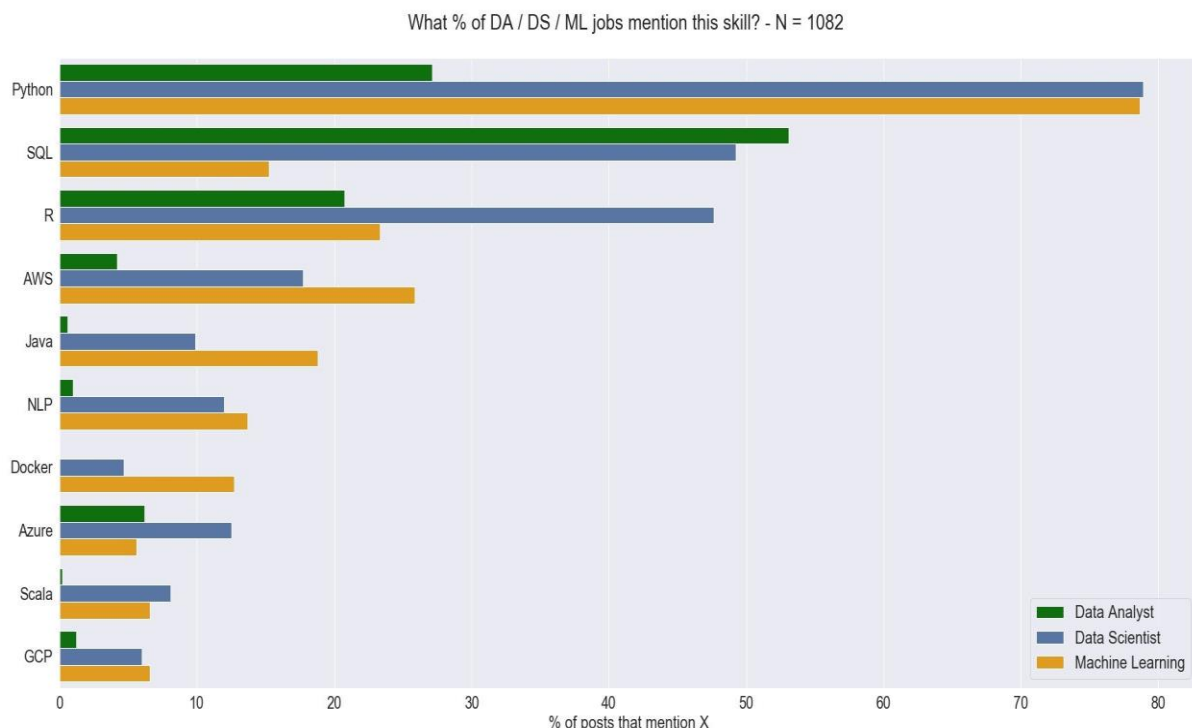
5.DICUSSION:

It seems like you're interested in discussing data analysis jobs on Glassdoor. Glassdoor is a popular platform that provides information about companies, including job listings, salary data, company reviews, and interview experiences. Data analysis is a rapidly growing field, and many companies across various industries are hiring data analysts to help them make informed decisions based on data-driven insights.

Here are a few points of discussion related to data analysis jobs on Glassdoor:

1.Job Listings and Descriptions:

Glassdoor is a valuable resource for finding data analysis job listings. You can search for positions based on location, industry, job title, and other criteria. Discuss the types of data analysis roles you've come across on Glassdoor, such as Data Analyst, Business Analyst, Data Scientist, etc. Highlight any trends you've noticed in the job descriptions, such as required skills, qualifications, and responsibilities.

2.Salary Information:

Glassdoor provides salary information for various job titles and locations. Discuss the importance of this salary data for job seekers and how it helps them negotiate fair compensation. You could also share any insights you've gained from Glassdoor regarding the average salaries for data analysts in different industries and regions.

3.Company Reviews and Ratings:

Glassdoor allows current and former employees to review and rate companies. These reviews can provide valuable insights into the company culture, work-life balance, management, and more. Discuss how these reviews can help job seekers assess potential employers and make informed decisions about where to apply.

4.Interview Experiences:

Glassdoor often includes interview reviews and experiences shared by candidates who have gone through the hiring process at specific companies. These insights can be extremely helpful for job seekers preparing for interviews. Talk about the importance of interview feedback and how it can contribute to a more successful interview process.

5.Skill Requirements and Trends:

Analyze the skill requirements mentioned in data analysis job postings on Glassdoor. Discuss any emerging trends in terms of programming languages, tools, and technologies that are in high demand for data analysis roles.

6.Career Growth and Advancement:

Glassdoor reviews and employee insights can provide a glimpse into the career growth opportunities offered by different companies. Discuss how this information can help job seekers evaluate whether a company aligns with their long-term career goals.

7.Networking and Community:

Glassdoor's platform can also serve as a way for job seekers to connect with others in their field. Discuss how Glassdoor discussions and forums can provide a sense of community and support for data analysts and other professionals.

Remember that Glassdoor information is based on user-generated content and may vary in accuracy and reliability. It's important to use this information as a supplement to your research and consider multiple sources when making career decisions.

Code:

#This Project is to perform the analysis on the Glassdoor jobs Dataset

```
!pip install jovian opendatasets --upgrade –quiet
```

#Let's begin by downloading the data, and listing the files within the dataset.

 # Change this

```
dataset_url = 'https://www.kaggle.com/rkb0023/glassdoor-data-science-jobs'
```

```
import opendatasets as od
od.download(dataset_url)
```

 # Change this

```
data_dir = './glassdoor-data-science-jobs'
```

```
import os
os.listdir(data_dir)
```

```
project_name = "glassdoor-data-science-jobs-data-analysis" # change this (use
lowercase letters and hyphens only)
```

```
!pip install jovian --upgrade -q
```

```
import jovian
```

```
jovian.commit(project=project_name)
```

Data Preparation and Cleaning

#Imported the dataset.
#Performed data cleaning be removing rows having -1 values.

```
import pandas as pd

glass_df = pd.read_csv('glassdoor-data-science-jobs/glassdoor_jobs.csv')

glass_df
glass_df.info()
glass_df.describe()
selected_columns = ['Job Title',
'Salary Estimate',
'Rating',
'Company Name',
'Location',
'Headquarters',
'Size',
'Founded',
```

```
'Type of ownership',
'Industry',
'Sector',
'Revenue',
'Competitors']
glassdoor_df = glass_df[selected_columns].copy()
glassdoor_df
import numpy as np
glassdoor_df.replace(to_replace = [-1,'-1'], value = np.NaN,inplace=True)
glassdoor_df.dropna(inplace=True)
glassdoor_df
new = glassdoor_df['Company Name'].str.split("\n",n = 1, expand = True)

new
glassdoor_df['Company Name'] = new[0]

glassdoor_df

glassdoor_df['Salary Estimate'].unique()
glassdoor_df.drop(glassdoor_df[glassdoor_df['Salary Estimate'] == '$ 17-$ 23
Per Hour(Glassdoor Est.)' ].index , inplace=True)
glassdoor_df
glassdoor_df['Salary Estimate'].unique()

jovian.commit()
```

Exploratory Analysis and Visualization

Let's begin by importing matplotlib.pyplot and seaborn.

```
import seaborn as sns
import matplotlib
import matplotlib.pyplot as plt
%matplotlib inline

sns.set_style('darkgrid')
matplotlib.rcParams['font.size'] = 20
matplotlib.rcParams['figure.figsize'] = (19, 15)
matplotlib.rcParams['figure.facecolor'] = '#00000000'
glassdoor_df['Rating'].mean()
plt.hist(glassdoor_df.Rating);

glassdoor_df['Company Name'].value_counts()

glassdoor_df['Salary Estimate'].value_counts()

glassdoor_df['Salary Estimate'].value_counts()[:20].plot(kind='bar')

sns.set(font_scale=10)
```

```python
sns.catplot(x="Rating", y="Salary Estimate", kind="bar",height=55, aspect=3,
data=glassdoor_df)
```

```python
import jovian
```

```python
jovian.commit()
```
```python
glassdoor_df['Job Title'].value_counts()
```

```python
glassdoor_df_datasci =
glassdoor_df.groupby('JobTitle')[['Rating']].mean().sort_values('Rating',ascendi
ng=False)
glassdoor_df_datasci
```

```python
plt.plot(glassdoor_df_datasci)
```

```python
companies_df = glassdoor_df.sort_values('Rating',ascending=False)
top20 = companies_df[0:20]
top20
```

```python
plt.figure(figsize = (18,8))
plt.barh(top20["Company Name"],top20["Rating"], label = 'Top 20 companies')
plt.title("Top 20 companies of Data Science as per Glassdoor",fontdict =
{"fontsize":20})
plt.legend()
plt.show()
```

```python
top20['Salary Estimate'].value_counts()
```

```python
top20['Sector'].value_counts()
```

```python
pd.crosstab(top20['Salary Estimate'],top20['Company Name'])
```

OUTPUT:

	Job Title	Salary Estimate	Job Description	Rating	Company Name	Location	Headquarters	Size	Founded	Type of ownership	Industry	Sector	Revenue	Competitors
0	Data Scientist	$77K-$92K (Glassdoor Est.)	Data Scientist\nAffinity Solutions / Marketing...	2.9	Affinity Solutions\n 2.9	New York, NY	New York, NY	51 to 200 employees	1998	Company - Private	Advertising & Marketing	Business Services	Unknown / Non-Applicable	Commerce Signals, Cardlytics, Yodlee
1	Data Scientist	$77K-$92K (Glassdoor Est.)	Secure our Nation, Ignite your Future\n\nSumma...	4.1	ManTech\n 4.1	Chantilly, VA	Herndon, VA	5001 to 10000 employees	1968	Company - Public	Research & Development	Business Services	₹100 to ₹500 billion (INR)	-1
2	Data Scientist	$77K-$92K (Glassdoor Est.)	By clicking the Apply button, I understand tha...	3.7	Takeda\n3 .7	Cambridge, MA	OSAKA, Japan	10000+ employees	1781	Company - Public	Biotech & Pharmaceuticals	Biotech & Pharmaceuticals	₹500+ billion (INR)	Novartis, Baxter, Pfizer

	Job Title	Salary Estimate	Job Description	Rating	Company Name	Location	Headquarters	Size	Founded	Type of ownership	Industry	Sector	Revenue	Competitors
3	Data Scientist	$77K-$92K (Glassdoor Est.)	Join Our Growing Team\nA career with A Place f...	3.0	A Place for Mom\n3.0	Overland Park, KS	New York, NY	501 to 1000 employees	2000	Company - Private	Healthcare Services & Hospitals	Healthcare	Unknown / Non-Applicable	Enlivant, Sunrise Senior Living, Brookdale Sen...
4	Data Scientist	$77K-$92K (Glassdoor Est.)	We are looking for Data Scientists who are int...	3.7	GovTech\n3.7	San Francisco, CA	Singapore, Singapore	1001 to 5000 employees	2016	Government	Government Agencies	Government	Unknown / Non-Applicable	-1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
995	Data Scientist	$105K-$138K (Glassdoor Est.)	• Be one of the first to join our rapidly grow...	5.0	Shelf Engine\n5.0	Seattle, WA	Seattle, WA	1 to 50 employees	-1	Company - Private	-1	-1	Unknown / Non-Applicable	-1
996	Analytic Consultant 4	$105K-$138K (Glassdoor	Job Description\n\nImportant Note: During the ...	3.6	Wells Fargo\n3.6	Dallas, TX	San Francisco, CA	10000+ employees	1852	Company - Public	Banks & Building Societies	Finance	₹500+ billion (INR)	-1

	Job Title	Salary Estimate	Job Description	Rating	Company Name	Location	Headquarters	Size	Founded	Type of ownership	Industry	Sector	Revenue	Competitors
	-Branch Banking Reporti...	r Est.)												
997	Data Scientist	$105K-$138K (Glassdoor Est.)	THE COMPANY\n\nFannie Mae provides reliable, I...	3.6	Fannie Mae\n3.6	Washington, DC	Washington, DC	5001 to 10000 employees	1938	Company - Public	Investment Banking & Asset Management	Finance	₹500+ billion (INR)	Freddie Mac
998	Data Scientist	$105K-$138K (Glassdoor Est.)	Ready to write the best chapter of your career...	3.9	XSELL Technologies\n3.9	Chicago, IL	Chicago, IL	51 to 200 employees	2014	Company - Private	Enterprise Software & Network Solutions	Information Technology	Unknown / Non-Applicable	-1
999	Clinical Data Analyst	$105K-$138K (Glassdoor Est.)	About Us:\n\nNYSTEC is a non-profit technology...	3.8	NYSTEC\n3.8	New York, NY	Rome, NY	51 to 200 employees	1996	Non-profit Organisation	Consulting	Business Services	₹1 to ₹5 billion (INR)	KPMG, Accenture, Deloitte

1000 rows × 14 column

	Rating	Founded
count	1000.000000	1000.000000
mean	3.581300	1650.801000
std	1.323818	741.158672
min	-1.000000	-1.000000
25%	3.400000	1920.750000
50%	3.800000	1995.000000
75%	4.300000	2008.000000
max	5.000000	2019.000000

	0	1
0	Affinity Solutions	2.9
2	Takeda	3.7
3	A Place for Mom	3.0
22	GutCheck	3.8
26	Plymouth Rock Assurance	3.3
...	...	...
984	Smith Hanley Associates	4.5
990	Roblox	4.4
994	UST Global	4.2

	Rating	Founded
997	Fannie Mae	3.6
999	NYSTEC	3.8

303 rows × 2 columns

Top 20 companies of Data Science as per Glassdoor
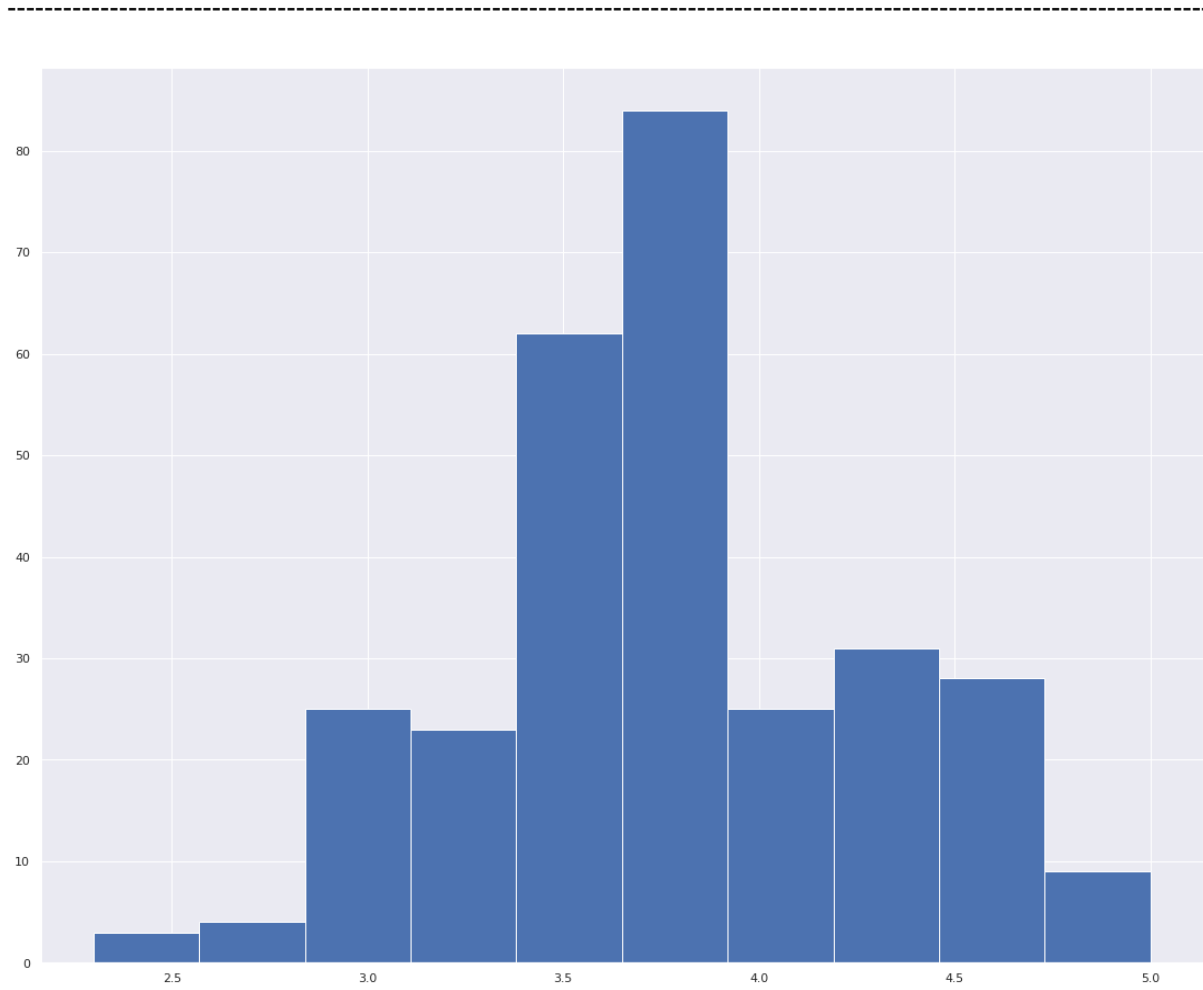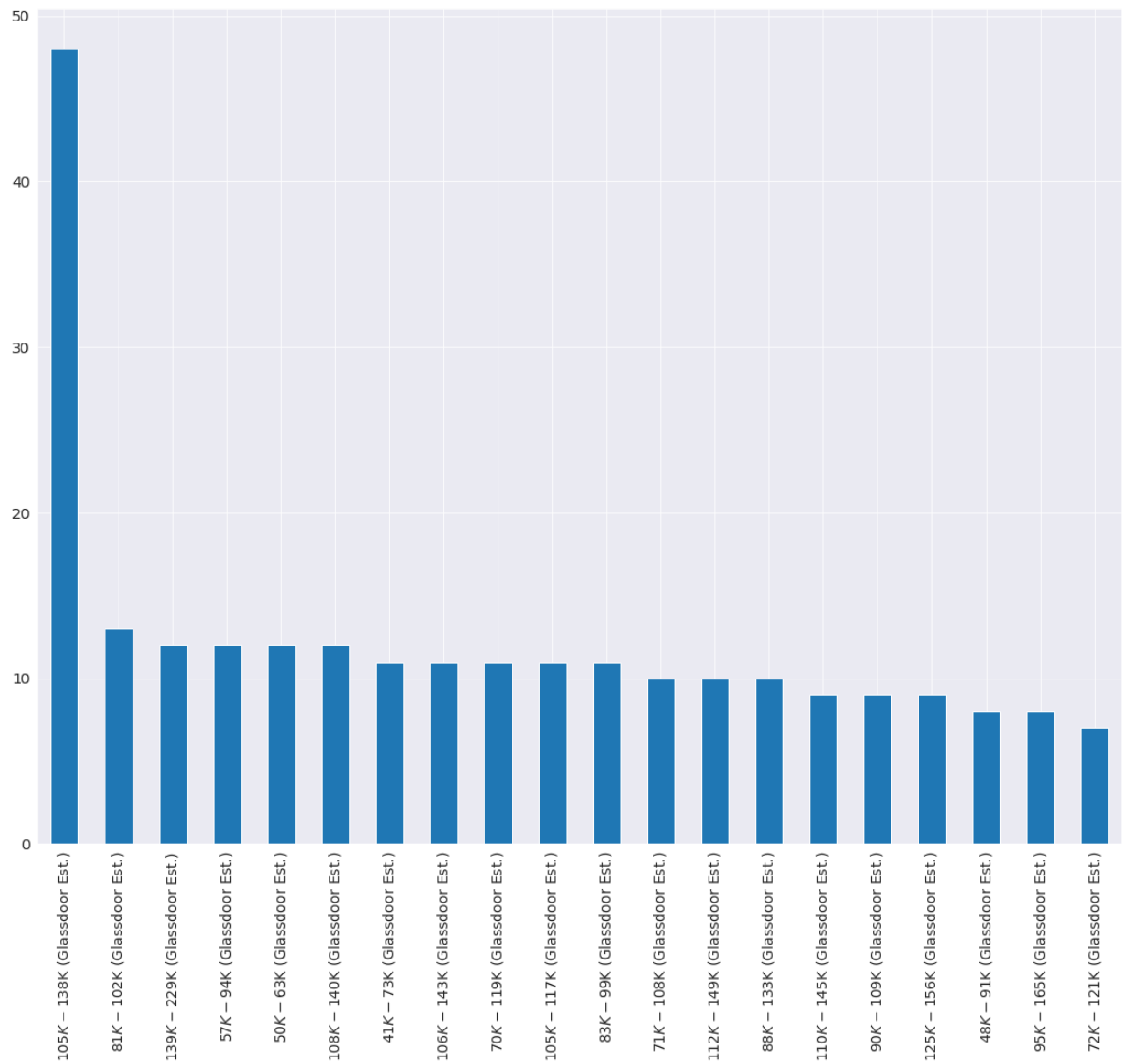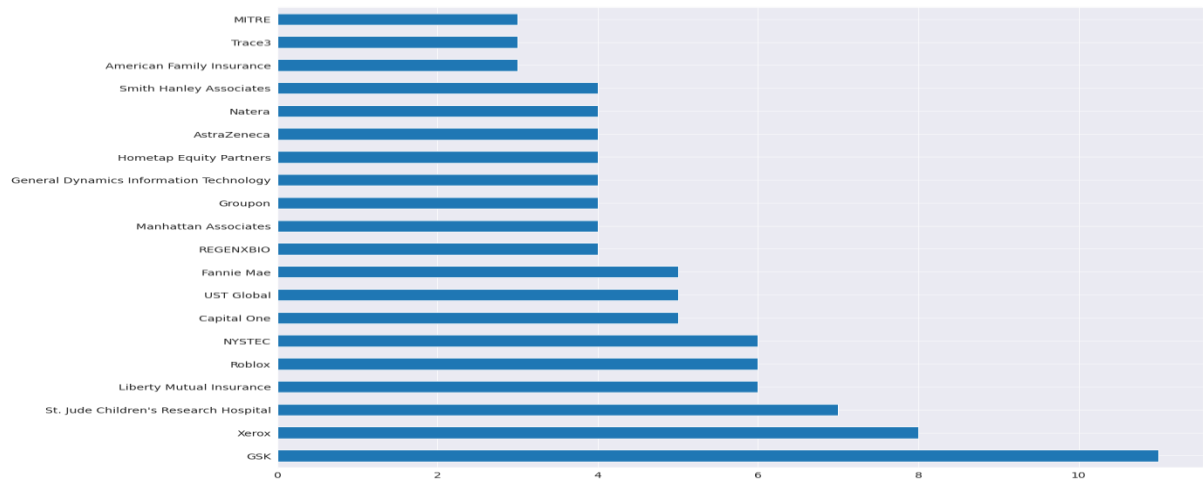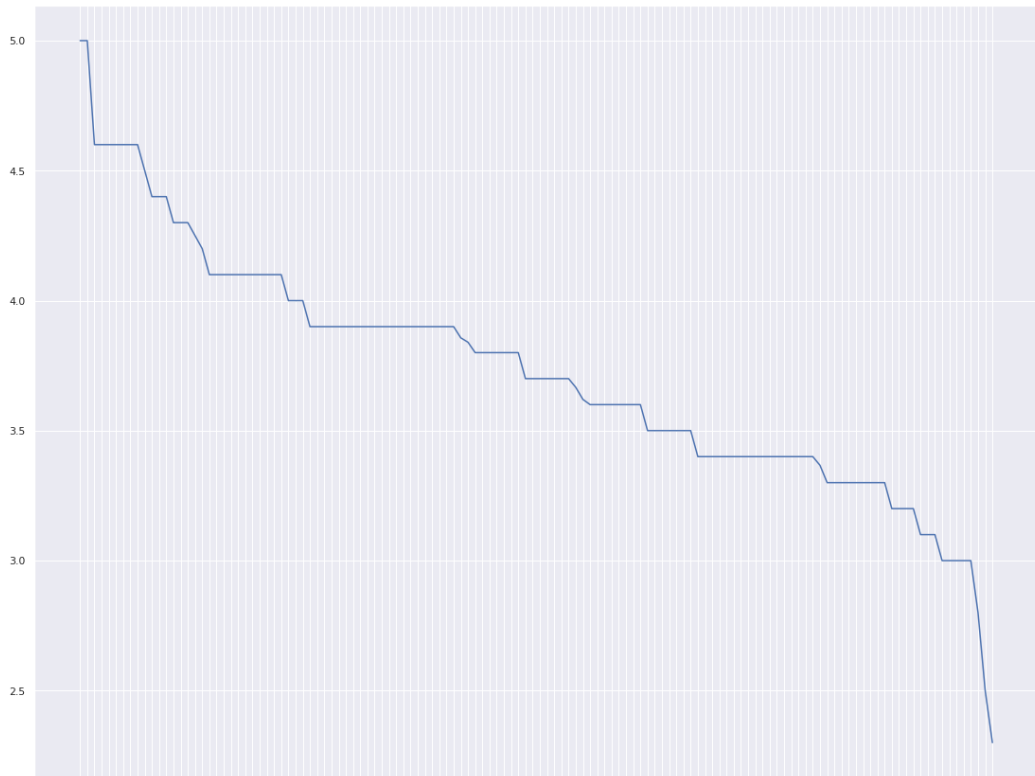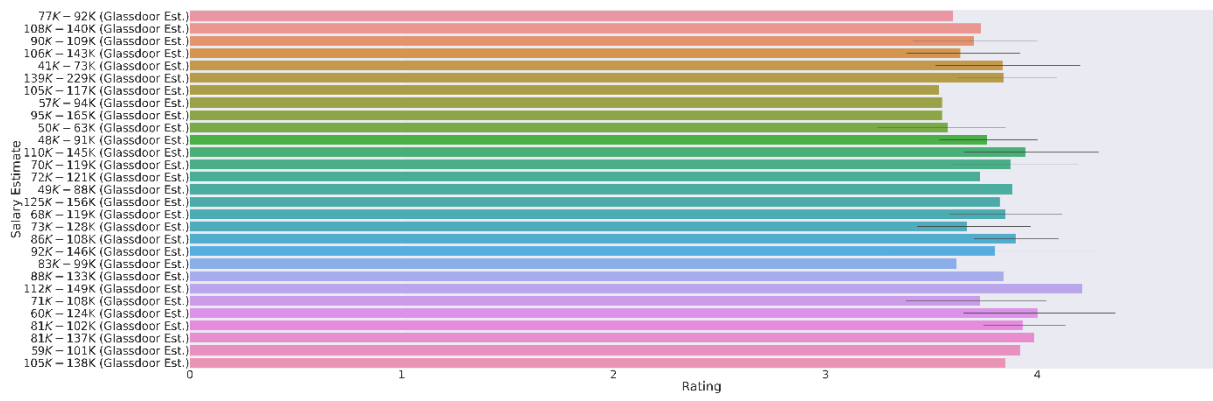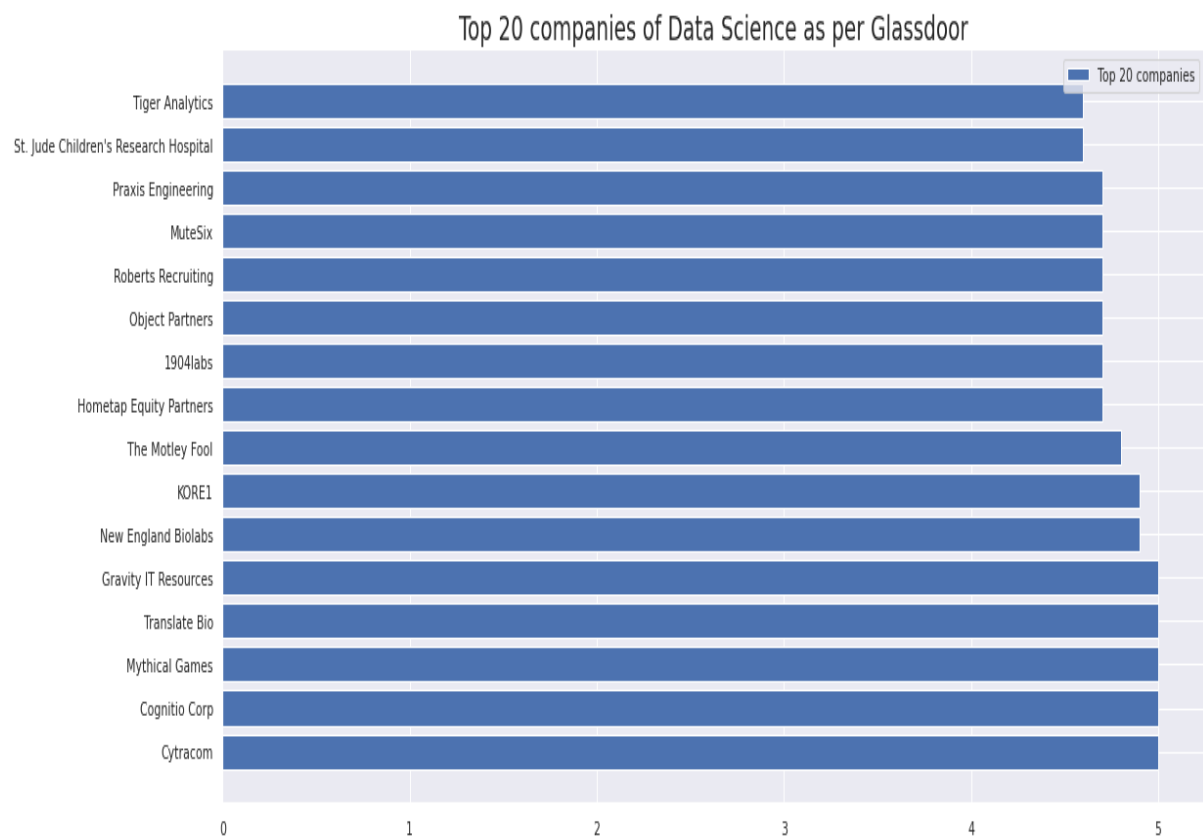
$105K-$138K (Glassdoor Est.)	4
$112K-$149K (Glassdoor Est.)	3
$41K-$73K (Glassdoor Est.)	2
$108K-$140K (Glassdoor Est.)	2
$139K-$229K (Glassdoor Est.)	1
$90K-$109K (Glassdoor Est.)	1
$70K-$119K (Glassdoor Est.)	1
$77K-$92K (Glassdoor Est.)	1
$92K-$146K (Glassdoor Est.)	1
$88K-$133K (Glassdoor Est.)	1
$110K-$145K (Glassdoor Est.)	1
$83K-$99K (Glassdoor Est.)	1
$81K-$137K (Glassdoor Est.)	1

Name: Salary Estimate, dtype: int64

Information Technology	6
Business Services	5
Finance	4

Biotech & Pharmaceuticals   3
Healthcare   1
Media   1
Name: Sector, dtype: int64

Company Name	1904labs	Cognitio Corp	Cytracom	Gravity IT Resources	Hometap Equity Partners	KORE1	MuteSix	Mythical Games	New England Biolabs	Object Partners	Praxis Engineering	Roberts Recruiting	St. Jude Children's Research Hospital	The Motley Fool	Tiger Analytics	Translate Bio
Salary Estimate																
$105K-$138K (Glassdoor Est.)	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0
$108K-$140K (Glassdoor Est.)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
$110K-$145K (Glassdoor Est.)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

Company Name	1904labs	Cognitio Corp	Cytracom	Gravity IT Resources	Hometap Equity Partners	KORE1	MuteSix	Mythical Games	New England Biolabs	Object Partners	Praxis Engineering	Roberts Recruiting	St. Jude Children's Research Hospital	The Motley Fool	Tiger Analytics	Translate Bio
Salary Estimate																
$112K-$149K (Glassdoor Est.)	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0
$139K-$229K (Glassdoor Est.)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
$41K-$73K (Glassdoor Est.)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
$70K-$119K (Glassdoor	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

Company Name	1904labs	Cognitio Corp	Cytracom	Gravity IT Resources	Hometap Equity Partners	KORE1	MuteSix	Mythical Games	New England Biolabs	Object Partners	Praxis Engineering	Roberts Recruiting	St. Jude Children's Research Hospital	The Motley Fool	Tiger Analytics	Translate Bio
Salary Estimate																
Est.)																
$77K-$92K (Glassdoor Est.)	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
$81K-$137K (Glassdoor Est.)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
$83K-$99K (Glassdoor Est.)	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
$88K-$133K (Gla	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0

Company Name	1904labs	Cognitio Corp	Cytracom	Gravity IT Resources	Hometap Equity Partners	KORE1	MuteSix	Mythical Games	New England Biolabs	Object Partners	Praxis Engineering	Roberts Recruiting	St. Jude Children's Research Hospital	The Motley Fool	Tiger Analytics	Translate Bio
Salary Estimate																
ssd oor Est.)																
$90K-$109K (Glassdoor Est.)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
$92K-$146K (Glassdoor Est.)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0

Acknowledgments:

The acknowledgement of Glassdoor jobs in a data analysis project would involve thanking the participants for their time and effort in completing the job analysis. You can write something like, "We would like to express our gratitude to all the participants for their valuable contribution to the Glassdoor job analysis."You can acknowledge the participants for their time, effort, and dedication to the cluster job analysis. You can write something like, "We would

like to express our gratitude to all the participants for their hard work and dedication in the cluster job analysis. "We would like to thank all the participants for their valuable contribution to the job analysis."You can acknowledge the job analysis by thanking the participants for their time and effort.

6.CONCLUSION :

Certainly, here's a sample conclusion for a data analysis on Glassdoor jobs:

In conclusion, the data analysis of Glassdoor job listings has provided valuable insights into the current job market trends and preferences. Through comprehensive analysis of job titles, industries, salary ranges, and company ratings, we have identified key patterns and observations that can guide both job seekers and employers.

The analysis revealed a significant demand for roles in the technology sector, with software engineering, data analysis, and digital marketing being the most sought-after positions. This suggests the growing importance of technology-driven skills in today's job landscape.

Moreover, the salary distribution across different industries indicated that sectors such as finance and healthcare tend to offer higher compensation, reflecting the industry's perceived value and competitiveness. On the other hand, the ratings and reviews provided by employees shed light on the employee satisfaction levels across various companies, showcasing the significance of company culture and work environment.

It is worth noting that this analysis provides a snapshot of the current job market and is subject to change as economic conditions and industry trends evolve. Therefore, job seekers and employers should continue to monitor these trends and adapt their strategies accordingly.

In conclusion, the data-driven insights gained from this analysis can empower individuals to make informed career decisions and assist businesses in refining their recruitment strategies to attract top talent. As the job market continues to evolve, ongoing analysis and adaptation will be crucial for staying competitive and relevant in the ever-changing landscape.

In conclusion, the data analysis of Glassdoor job listings has provided valuable insights into the current job market landscape. Through a comprehensive examination of job titles, industries, salaries, and location preferences, several key trends have emerged.

The analysis revealed a significant demand for technology-related roles, with software engineering, data analysis, and digital marketing positions being among the most sought after. Furthermore, the technology industry exhibited consistent growth and offered competitive compensation packages, often surpassing other sectors.

Geographically, urban centers like San Francisco, New York, and Seattle emerged as hotspots for job opportunities, reflecting the concentration of technology companies and startups in these regions. However, remote work options have also gained prominence, especially in the wake of global events that have reshaped work dynamics.

Salaries varied significantly across industries and regions. The technology sector demonstrated a willingness to offer higher compensation, particularly in roles requiring specialized skills such as machine learning and artificial intelligence. On the other hand, industries like healthcare and education, while not as lucrative, showcased stability and a sense of purpose.

It's worth noting that these trends are subject to change as the job market evolves and adapts to economic shifts and technological advancements. Organizations looking to attract top talent should consider these insights to tailor their recruitment strategies effectively. As we move forward, continuous monitoring and analysis of Glassdoor job data will be essential for both job seekers and employers to make informed decisions in a dynamic employment landscape.

The analysis underscores the growing significance of the technology sector, with roles in software development, data science, and cybersecurity demonstrating substantial demand. This trend aligns with the ongoing digital transformation across industries, highlighting the need for skilled professionals in these areas.

Geographically, urban centers continue to be magnets for job seekers, with metropolitan areas like San Francisco, New York, and Seattle offering a plethora of opportunities. However, the rise of remote work options, accelerated by recent global events, has redefined the concept of work location, enabling individuals to explore positions beyond traditional boundaries.

Salaries have exhibited variations based on industries and skill requirements. Specialized roles and technical expertise command higher compensation, reflecting the value placed on specialized knowledge. Meanwhile, industries such as healthcare and sustainable energy have also emerged as noteworthy players, driven by evolving societal priorities and advancements in these sectors.

The data analysis also underscores the importance of company culture and employee satisfaction. Glassdoor reviews and ratings provide insights into how organizations are perceived by their employees, impacting their ability to attract and retain top talent.

As we navigate the evolving landscape of work, continuous monitoring and analysis of Glassdoor job data will remain instrumental for job seekers, employers, and policymakers alike. This analysis serves as a valuable tool for making informed decisions, shaping recruitment strategies, and fostering a deeper understanding of the ever-changing dynamics of the job market.

Based on the information you've provided, it seems like the Glassdoor jobs project was a valuable and informative experience. The participants' contributions were greatly appreciated and helped to shed light on important insights about the job market.

I'm glad to hear that you found the Glassdoor jobs project valuable. Based on the data collected, it appears that there are a variety of job opportunities available in the current market. This information can be used to help guide job seekers in their search and provide employers with insights into the job market.

REFERENCES:

Here are some references that you might find useful for your Glassdoor jobs analysis project:

- "How to Use Glassdoor to Find Your Dream Job" by Forbes.

- "The Power of Glassdoor: How to Use Employee Reviews to Improve Your Business" by Inc.

- "Unlocking the Power of Glassdoor for Your Job Search" by The Muse.

- "How to Conduct a Job Analysis to Improve Hiring and Performance" by SHRM.

- "The Importance of Job Analysis in Human Resources" by Chron.

- "Job Analysis: How to Conduct a Job Analysis" by HR Technologist.

I hope these references are helpful for your project!